Managing the Catalyst 3900

To aid in system management, the Catalyst 3900 allows you to obtain a variety of status, statistic, and diagnostic information. This chapter provides information on the following:

- Accessing Statistics Information on page 8-2
- Viewing Catalyst 3900 Operating Statistics on page 8-2
- Viewing Port Status on page 8-4
- Viewing Statistics for a Specific Port on page 8-5
- Viewing ATM Port Statistics on page 8-17
- Viewing ISL Port Statistics on page 8-29
- Viewing Address Tables on page 8-34
- Viewing Spanning-Tree Information for a VLAN on page 8-40
- Viewing Statistics for Each VLAN on page 8-43
- Viewing CDP Neighbor Information on page 8-46
- Viewing VTP Statistics on page 8-47
- Viewing Diagnostic Test Results on page 8-49
- Viewing the Message Log on page 8-50
- Displaying a Summary of Your Configuration on page 8-52

For information about setting up a console session, refer to the "Planning for Configuration and Management" chapter.


Note   The Catalyst 3900 allows LAN Network Manager LLC frames to flow through the switch. Therefore, communication between LAN Network Manager and existing source-route bridges and controlled access units is maintained. However, some error reporting functions and ring map functions might be lost for the rings attached to the Catalyst 3900.

Accessing Statistics Information

The Catalyst 3900 allows you to view status information and statistics for individual ports or for the Catalyst 3900 as a whole. This information is displayed on several panels that are accessible from the Statistics Menu.

To access the Statistics Menu, select **Statistics** on the Main Menu. The Statistics Menu (Figure 8-1) is displayed.

Figure 8-1   Statistics Menu Panel
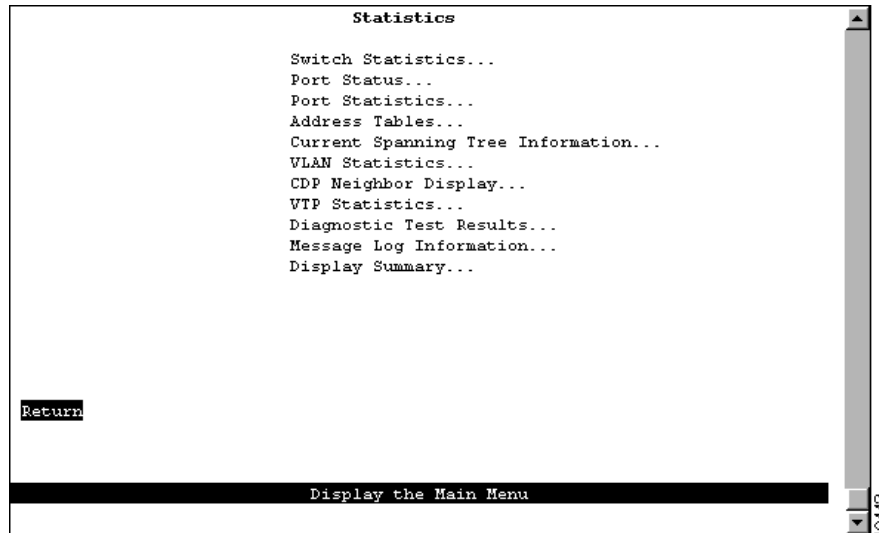
Viewing Catalyst 3900 Operating Statistics

To view operating statistics for the Catalyst 3900, select **Switch Statistics** on the Statistics Menu. The Switch Statistics panel (Figure 8-2) is displayed. The information on the statistics panels is refreshed approximately every five seconds.

Figure 8-2   Switch Statistics Panel

```
                    Box 1 Switch Statistics

        System Up Time              16 Hr, 32 Min, 48 Sec
        Board Temperature           Normal (39.0 C)
        Power Supply Status         Internal only

        Frames Transmitted               159461
        Frame Transmit Errors                 0
        Frames Received                   78579
        Error Frames Received                 0
        Frames Lost                           0
        Pending Send Requests                 0
        DRiP Advertisements Transmitted    1984
        DRiP Advertisements Received          0
        Currently Active Stations            19
        Largest Number of Stations           25
        Maximum Address Table Chain           1
        Address Table Full                    0

 Return      Reset


                    Return to previous menu
```

The following information is displayed on this panel:

- System Up Time—Length of time (in hours, minutes, and seconds) since the last reset or power cycle.

- Board Temperature—Indicates whether the board temperature is Normal or Unacceptably high (over 140˚F or 60˚C).

- Power Supply Status—Indicates the current status of the power supply. Possible values are the following:

  — Internal only—Internal power supply is acting as the main power source. The switch is not capable of being connected to a redundant power supply (RPS) unit.

  — Internal w/no backup—Internal power supply is acting at the main power source and either the switch is not connected to an RPS unit or the RPS unit is not operational.

  — Internal w/backup (will reset)—Internal power supply is acting as the main power source and the switch is connected to an RPS unit that is ready to supply backup power in the event that the main source fails. If the power supply is changed from the internal supply to the RPS (due to a failure in the internal supply), the switch will reset.

  — External w/no backup—RPS unit is acting as the main power source and there is no backup power supply available. This is either because the switch is connected to only one of the RPS DC supplies and the internal power supply has failed or because the switch is connected to two of the RPS DC supplies and one of them has failed.

  — External w/backup (no reset)—RPS unit is acting as the main power source and is ready to supply backup power. This means that the switch is connected to two of the RPS DC supplies.

- Frames Transmitted—Number of frames transmitted from the Catalyst 3900 control processor.

- Frame Transmit Errors—Number of frames unable to be transmitted by the processor because of transmit errors.

- Frames Received—Number of frames received by the Catalyst 3900 control processor.

- Error Frames Received—Number of frames received that were too long or short.

- Frames Lost—Number of frames dropped because of errors.

- Pending Send Requests—Number of frames in the send queue.

- DRiP Advertisements Transmitted—Number of DRiP advertisements transmitted on the local ISL ports. This field is displayed only if there is an ISL module installed in the Catalyst 3900 or in a switch in the stack to which the Catalyst 3900 belongs.

- DRiP Advertisements Received—Number of DRiP advertisements received on the local ISL ports. This field is displayed only if there is an ISL module installed in the Catalyst 3900 or in a switch in the stack to which the Catalyst 3900 belongs.

- Currently Active Stations—Number of entries in the address table, that represent currently active stations, or nodes, on all ports of the Catalyst 3900.

- Largest Number of Stations—Largest number of addresses in the address table at any one time since the last reset or power cycle.

- Maximum Address Table Chain—Largest number of addresses that have hashed to the same location in look-up tables having the same index.

- Address Table Full—Number of times the address table has reached capacity.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing Port Status

To view status information for each port of the Catalyst 3900, select **Port Status** on the Statistics Menu. The Port Status panel (Figure 8-3) is displayed.

Figure 8-3   Port Status Panel

The following information is displayed on this panel:

- Port—Port number. For an ATM port, there is an entry for each virtual ATM port, or LEC, defined.

- TrCRF—Name of the TrCRF to which this port belongs. The panel shows only the first 16 characters of the name. For an ATM port, this is the name of the TrCRF to which the LEC belongs. For an ISL port, this field displays trunking. A value of None indicates that the port is configured as a SPAN port or was previously configured as a SPAN port and was left unassigned to a TrCRF when the SPAN port feature was disabled.

- TrBRF—Name of the TrBRF to which this port belongs. The panel shows only the first 16 characters of the name. For an ISL port, this field displays trunking.

- Enabled—Indicates whether the port is enabled. Possible values are Yes and No. For ports associated with an LEC, the possible values are Disabled, Going Up, Up, Going Admin Down, Admin Down, Failing, Waiting for Module Up, and Forwarding.

- Ins—Indicates whether the port is inserted into the ring. Possible values are Yes and No.

- Spd—Speed of the port in megabits per second. For an ATM port, the only possible value is 155. For an ISL port, the only possible value is 100.

- Oper Mode—Operating mode of the port. Possible values are:

  — HDX port—Half-duplex mode in which only a dedicated connection to a station is supported. The Tx/Rx pinouts are the same as a concentrator's.

  — HDX station—Half-duplex mode in which the port operates like a station. The connection may be dedicated or shared. The Tx/Rx pinouts are the same as an adapter's.

  — FDX port—Full-duplex mode in which only a dedicated connection to a station is supported. The Tx/Rx pinouts are the same as a concentrator's.

  — FDX station—Full-duplex mode in which the port operates like a station. The connection may be dedicated or shared. The Tx/Rx pinouts are the same as an adapter's pinouts.

  — RI—Ring in mode.

  — RO—Ring out mode.

  — RI/RO—Ring-in/ring-out mode. Only displayed for ports 19 and 20.

  — ATM ELAN—For ATM ports only.

- Fwd Mode—Forwarding mode of the port. Possible values are Cut-thru and Store-Fwd. For ports with a speed of 4 Mbps, ATM ports, and ISL ports, the only possible mode is Store-Fwd.

You cannot change any information on this panel. To change the port parameters, refer to the "Configuring Port Parameters" section on page 6-33 of the "Configuring the Catalyst 3900" chapter.

Viewing Statistics for a Specific Port

To view statistics for a specific port, select **Port Statistics** on the Statistics Menu and specify the port number. The Port Statistics panel (Figure 8-4) is displayed. If you specify the port number of an ATM port, the Port *x* ATM Statistics panel is displayed. See the "Viewing ATM Port Statistics" section on page 8-17 for more information. If you specify the port number of an ISL port, the Port *x* ISL Statistics panel is displayed. See the "Viewing ISL Port Statistics" section on page 8-29 for more information.

Figure 8-4   Port Statistics Panel

The following options are displayed on this panel:

- General Statistics—Select this option to view general port statistics. For more information, refer to the "Viewing General Port Statistics" section on page 8-6.

- Statistics—Select this option to view 802.5 port statistics. For more information, refer to the "Viewing 802.5 Port Statistics" section on page 8-8.

- 802.5 State Information—Select this option to view 802.5 state information for each port. For more information, refer to the "Viewing 802.5 Port State Information" section on page 8-10.

- 802.5 DTR MAC Information—Select this option to view dedicated Token Ring information for each port. For more information, refer to the "Viewing 802.5 Dedicated Token Ring MAC Information" section on page 8-11.

- Soft Error Monitoring Statistics—Select this option to view the soft error statistics for each station on a port. For more information, refer to the "Viewing Soft Error Monitoring Statistics" section on page 8-15.

Viewing General Port Statistics

To view general port statistics, select **General Statistics** on the Port Statistics panel. The Port x General Statistics panel (Figure 8-5) is displayed. The information on the statistics panels is refreshed approximately every five seconds.

Figure 8-5   Port x General Statistics Panel


```
              Box 1 Port 1 General Statistics - Port is Forwarding

Frames Forwarded              575250 Largest Number of Stations      30
NSR Frames Forwarded          237166 Address Chain Overflows          0
SRF Frames Forwarded          232420 Address Table Overflows          0
STE Frames Forwarded           96194 Received Frame Errors            0
ARE Frames Forwarded            9470 Receive Buffer Overflows         0
MAC Frames Forwarded              10 Transmit Buffer Overflows        0
Frames Processed              353365 Long Frames                      0
Frames Unknown                 11848 Short Frames                     0
Frames Transmitted             20883 Duplicate Ring Number            0
Frames Received               591428 Invalid RIF RC Field             0
Broadcast Frames Received     113731 RIF Length Exceeded              0
Multicast Frames Received     458061 Explorer Overflow                0
Frames Filtered - MAC Addr        18 Ring Number Mismatch             0
Frames Filtered - Protocol         0 Config Loss                      0
Local Address Entries             12 Config Loss Reason            None
Remote Address Entries            14 Last Reset 123 Hr, 30 Min, 45 Sec

Return      Reset



                         Return to previous menu
```

The following information is displayed on this panel:

- Frames Forwarded—Number of frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- NSR Frames Forwarded—Number of non-source-routed frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- SRF Frames Forwarded—Number of source-routed frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- STE Frames Forwarded—Number of spanning-tree explorer frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- ARE Frames Forwarded—Number of all-routes explorer frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- MAC Frames Forwarded—Number of MAC frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- Frames Processed—Number of frames received on this port and delivered to the Catalyst 3900 system software for processing.

- Frames Unknown—Number of frames processed by the Catalyst 3900 system software that contained either an unknown source address or unknown destination address.

- Frames Transmitted—Number of frames transmitted by the port.

- Frames Received—Number of frames received by the port.

- Broadcast Frames Received—Number of broadcast frames received without errors.

- Multicast Frames Received—Number of multicast frames received without errors.

- Frames Filtered - MAC Addr—Number of frames filtered by the MAC address filters.

- Frames Filtered - Protocol—Number of frames filtered by the protocol filters.

- Local Address Entries—Number of addresses on this port that belong to the local segment.

- Remote Address Entries—Number of addresses on this port that belong to another segment.

- Largest Number of Stations—Largest number of addresses active since the last reset of the Catalyst 3900.

- Address Chain Overflows—Number of times an address hash bin has reached the maximum number of entries.

- Address Table Overflows—Number of times the address table has reached the maximum number of entries.

- Received Frame Errors—Total number of frames received by this port that contained errors.

- Receive Buffer Overflows—Number of frames received on this port that caused a buffer overflow.

- Transmit Buffer Overflows—Number of frames lost because of the inability of the transmit queue to accept a frame from another port.

- Long Frames—Number of frames received that exceed the maximum frame length limit as specified by the configured MTU.

- Short Frames—Number of frames received that were less than 18 bytes.

- Duplicate Ring Number—Number of frames received that contained a duplicate ring number.

- Invalid RIF RC Field—Number of frames received that contained an illegal Routing Control field.

- RIF Length Exceeded—Number of frames received that contained a RIF that was too long.

- Explorer Overflow—Number of explorer frames dropped because the maximum explorer-forwarding rate was exceeded (as specified on the Port Configuration panel described in the "Configuring Port Parameters" section on page 6-33 of the "Configuring the Catalyst 3900" chapter).

- Ring Number Mismatch—Number of frames received that did not correctly include the port's ring number.

- Config Loss—Number of Token Ring configuration loss events after the port has completed the join process and then lost communication.

- Config Loss Reason—Error code of the latest configuration loss event. Possible values are None, Wire Fault, Lobe Test Fail, TKP Frame Error, Heart Beat Fail, TXI New Station, TXI Prot Error, Speed Error, Remove Received.

- Last Reset—Time (in hours, minutes, and seconds) since the port statistics were last reset.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing 802.5 Port Statistics

To view 802.5 port statistics, select **802.5 Statistics** on the Port Statistics panel. The Port x 802.5 Statistics panel (Figure 8-6) is displayed. This panel is automatically refreshed every five seconds.

Figure 8-6   Port x 802.5 Statistics Panel

The following information is displayed on this panel:

- Line Errors—Number of times a frame or token was copied or repeated by a station.

- Burst Errors—Number of times a station has detected the absence of transitions for five half-bit timers (burst-five error).

- AC Errors—Number of times a station received an Active Monitor Present (AMP) frame or a Standby Monitor Present (SMP) frame in which both the address recognized (A) bit and the frame copied (C) bit are set to 0, indicating that no station has recognized the destination address and copied the frame, and then receives another SMP frame in which both the address recognized bit and the frame copied bit are set to 0 without first receiving an AMP frame. This condition indicates a station that cannot set the address recognized and the frame copied bits properly.

- Abort Transmit Errors—Number of times a station transmitted an abort delimiter while transmitting.

- Internal Errors—Number of times a station recognized an internal error.

- Lost Frame Errors—Number of times a station was transmitting and its return-to-repeat timer expired. This condition indicates a condition where a transmitting station in strip mode does not receive the trailer of the frame before the return to repeat timer goes off.

- Receive Congestion—Number of times a station recognized a frame addressed to its specific address, but had no available buffer space, indicating that the station is congested.

- Frame Copied Errors—Number of times a station recognized a frame addressed to its specific address and detected that the frame status field A bits are set to 1, indicating a possible line hit or duplicate address.

- Token Errors—Number of times a station acting as the active monitor recognized an error condition that required a token to be transmitted.

- Soft Errors—Number of soft errors the port has detected. Soft errors are those that are recoverable by the MAC layer protocols. The soft error number directly corresponds to the number of report error MAC frames that this port has transmitted.

- Hard Errors—Number of times this port has detected an immediately recoverable fatal error. This denotes the number of times this port has either transmitted or received a beacon MAC frame.
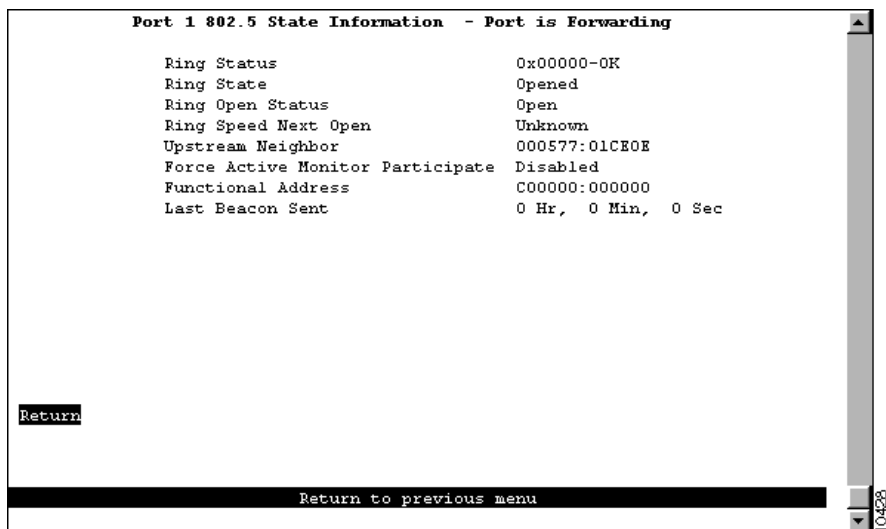
- Signal Loss—Number of times this port has detected a loss of signal condition from the ring.

- Transmit Beacons—Number of times this port has transmitted a beacon frame.

- Recoveries—Number of claim token MAC frames received or transmitted after the port has received a ring purge MAC frame. This counter signifies the number of times the ring has been purged and had recovered back into a normal operating state.

- Lobe Wires—Number of times the port has detected an open or short circuit in the lobe data path. The adapter will be closed and ring state will signify this condition.

- Removes—Number of times the port has received a remove ring station MAC frame request. When this frame is received the port will enter the closed state.

- Singles—Number of times the port has sensed that it is the only station on the ring. This occurs if the port is the first one up on a ring, or if there is a hardware problem.

- Frequency Errors—Number of times the port has detected that the frequency of the incoming signal differs from the expected frequency by more than that specified by the IEEE 802.5 standard.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing 802.5 Port State Information

To view 802.5 port state information, select **802.5 State Information** on the Port Statistics panel. The Port x 802.5 State Information panel (Figure 8-7) is displayed.

Figure 8-7   Port x 802.5 State Information Panel


```
        Port 1 802.5 State Information   - Port is Forwarding

          Ring Status                      0x00000-OK
          Ring State                       Opened
          Ring Open Status                 Open
          Ring Speed Next Open             Unknown
          Upstream Neighbor                000577:01CE0E
          Force Active Monitor Participate Disabled
          Functional Address               C00000:000000
          Last Beacon Sent                 0 Hr,  0 Min,  0 Sec




Return




                        Return to previous menu
```

The following information is displayed on this panel:

- Ring Status—Current port status on the ring. This field has the general format 0x*nnnnn-text_string* where *nnnnn* is a hexadecimal error code value, and *text_string* can be No Status, OK, or Error. Before an open is completed, the field has the value: 0x20000-No Status. If no problems are detected this field will display: 0x00000-OK. Other error conditions are indicated by: 0x*nnnnn*-Error.

- Ring State—Current port state with respect to the port entering or leaving the ring. Possible values are Opened, Closed, Opening, and Closing.

- Ring Open Status—Indicates whether the station successfully entered the ring in its most recent attempt, and, if not, the reason for failure. Possible values are Open, No Open, Lobe Failed, Signal Loss, Insertion Timeout, Ring Failed, Beaconing, Duplicate MAC Address, Request Failed, and Remove Received.

- Ring Speed Next Open—Ring speed, if known, that will be used the next time the port inserts into the ring. Possible values are Unknown, 4 Mbps, and 16 Mbps.

- Upstream Neighbor—MAC address of the nearest active upstream neighbor (NAUN) station on the ring.

- Force Active Monitor Participate—Indicates whether this port will seek to become the active monitor selection process. Possible values are Enabled (yes) and Disable (no). Disable does not prevent the switch from becoming the active monitor, it only means that the switch will not seek to become the active monitor.

- Functional Address—Bit mask of all Token Ring functional addresses for which this port will accept frames.

- Last Beacon Sent—Elapsed time (in hours, minutes, and seconds) since a beacon frame was last sent on this port.

Viewing 802.5 Dedicated Token Ring MAC Information

To view 802.5 port dedicated Token Ring MAC information, select **802.5 DTR MAC Information** on the Port Statistics panel. The Port x 802.5 DTR MAC Information panel (Figure 8-8) is displayed.

Figure 8-8   Port x 802.5 DTR MAC Information Panel

The following options are displayed on this panel:

- TXI Information—Select this option to view dedicated Token Ring TXI information. For more information, refer to the "Viewing Dedicated Token Ring MAC TXI Information" section on page 8-12.

- Station-CPort Information—Select this option to view dedicated Token Ring station-Cport information. For more information, refer to the "Viewing Dedicated Token Ring MAC Station-CPort Information" section on page 8-14.

Viewing Dedicated Token Ring MAC TXI Information

If you select **TXI Information** on the Port x 802.5 DTR MAC Information panel, the Port x 802.5 DTR MAC TXI Information panel (Figure 8-9) is displayed.

Figure 8-9   Port x 802.5 DTR MAC TXI Information Panel

The following information is displayed on this panel:

- Authorized Function Classes—Functional classes that a node is enabled to transmit. This value is set in the Enabled Function Class subvector (x'06') of the Change Parameters MAC frame. Possible values are 0x0000 through 0xFFFF. Each bit that is enabled corresponds to a function class that is enabled.

- Error Report Timer (.01 sec)—Timeout value (in milliseconds) of the ring stations soft error report timer. This value is set in the Error Timer Value subvector (x'05') of the Change Parameters MAC frame or the Initialize Station MAC frame.

- Physical Drop Number—Physical location of the sending ring station. This value is set in the Assign Physical Location subvector (x'04') of the Change Parameters MAC frame or the Initialize Station MAC frame. Possible values are 0x00000000 through 0xFFFFFFFF.

- Join State—Present state of the join finite state machine. Possible values are Not Specified, Bypass, Registration, Lobe Test, Dup Addr Check, Dup Addr Det, Join Complete, and Await Notify.

- Monitor State—Present state of the monitor finite state machine. Possible values are Not Specified, Operational, Transmit Beacon, Wire Fault Delay, and Int Test Wait.

- Beacon Source Address—Source address used in the last beacon MAC frame transmitted or received.

- Beacon UNA—Individual MAC address of the sending ring station's NAUN. This value is set in the NAUN subvector x'02' used in the last beacon MAC frame transmitted or received. Possible values are either a valid individual MAC address or Unknown.

- Beacon Physical Drop Number—Physical location of the sending ring station. This value is set in the Physical Location subvector (x'0B') of the last beacon MAC frame transmitted or received. Possible values are 0x00000000 through 0xFFFFFFFF.

- Event Status—Latest event status of the TXI interface. Possible values are Insert REQ Rec, Insert RPS Rec, Report Error, Heart Beat Lost, Signal Loss, Beacon Received, Remove, Internal Error, Station/CPort Err, Wire Fault, Claim Received, Purge Received, Standby Received, Invalid SA, Act Mon Recvd, Phantom Loss, and Dup Addr Det.

Viewing Dedicated Token Ring MAC Station-CPort Information

If you select **Station-CPort**, the Port x 802.5 DTR MAC Station-CPort Information panel (Figure 8-10) is displayed.

Figure 8-10   Port x 802.5 DTR MAC Station-CPort Information Panel

The following information is displayed on this panel:

- Station Requested Access Protocol—Protocol requested for station access. This value is set in the Access Protocol Request subvector (x'0E') of the registration request MAC frame. Possible values are TXI and TKP.

- Station Access Protocol Response—Response to protocol request. This value is set in the Access Protocol Response subvector (x'0F') of the registration response MAC frame. Possible values are Access Denied and TXI+Wire Fault.

- Station Individual Address Count—Number of individual addresses supported by the MAC and used in the Individual Address Count subvector (x'21'). This field will always display the value 1.

- Station Phantom Drive Support—MAC's support of phantom drive and wire fault detection. It indicates the value of the Station Phantom Vector (Phantom Drive) [SPV(PD)] variable and the value of the phantom subvector X'0C' used in the registration request MAC frame. This field will always display Ph Drv+Wire Fault for phantom drive and wire fault support.

- CPort Phantom Drive Mask—Value of the C-Port policy variable Port Phantom Vector (Phantom Drive Mask [PPV(PD_MASK)]. This variable indicates the phantom drive and wire fault detection methods supported by the C-Port. Possible values are RI-RO and Not RI-RO.

- Common Access Protocol Mask—Access protocols can be supported by the PMAC. It displays the value of the PPV(AP_MASK). Possible values for this field are TKP, TXI, and TKP+TXI.

- Common Policy Flags—Station policy flags as a hexadecimal value of the form 0xnnnn.

Viewing Soft Error Monitoring Statistics

To view soft error statistics for a port, select **Soft Error Monitoring Statistics** on the Port Statistics panel. The Soft Error Monitoring Statistics panel (Figure 8-11) is displayed.

Figure 8-11   Soft Error Monitoring Statistics Panel

The following information is displayed on this panel:

- ID—Identifier of the station.

- Station—MAC address of the station.

- Station Last NAUN—MAC address of last known NAUN of this station. A zero MAC address displays in this field when the Report Soft Error MAC frames being monitored do not contain a NAUN address (the station generating the soft error does not know the NAUN).

- Errors—Number of soft errors collected for the station. An asterisk (*) next to the value in this field indicates that the soft errors collected for this station have exceeded the user-defined threshold for this port.

| To	Select	Then
Search for the statistics for a station…	**Search**	Specify the MAC address of the station.
View the statistic details for a station...	**Details**	Specify the MAC address or ID of the station.
Issue a Remove Station MAC frame to remove a station from the ring...	**Remove_Station**	Specify the MAC address or ID of the station.
View the soft error statistics for stations on another port...	**Change_Port**	Specify the port.
Refresh the information displayed on the panel...	**Refresh**	
Reset the statistics displayed on the panel...	**Reset**	

> ⚠️ **Caution**   Selecting **Remove_Station** and specifying the MAC address or ID of a station issues a Remove Station MAC frame to that station and removes the station from the ring. Use this procedure with extreme caution.

Viewing Soft Error Station Details

To view the details about the soft errors collected for a specific station, select **Details** on the Soft Error Monitoring Statistics panel and enter the MAC address or ID of the station. The Soft Error Monitoring Station Details panel (Figure 8-12) is displayed.

Figure 8-12   Soft Error Monitoring Station Details Panel
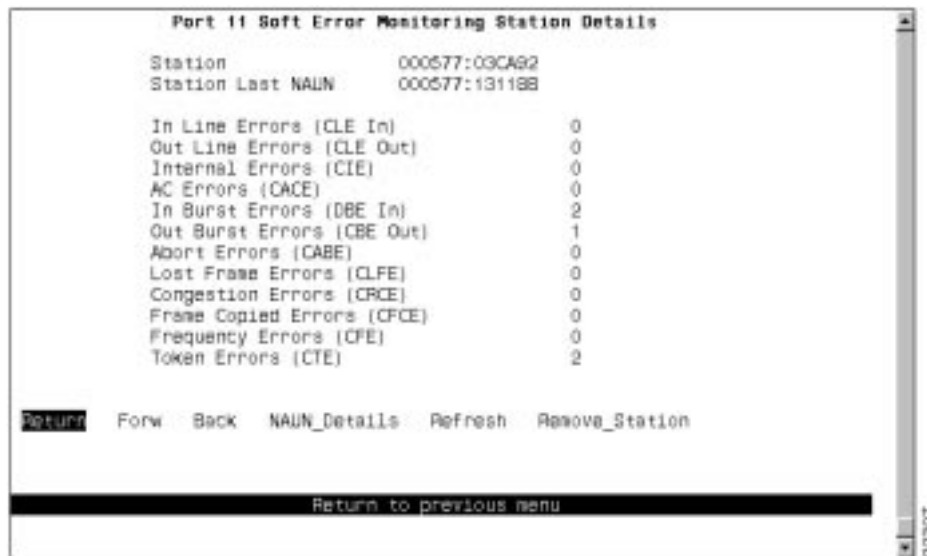
The following information is displayed on this panel:

- Station—MAC address of the station.

- Station Last NAUN—MAC address of the station's NAUN.

- In Line Errors (CLE In)—Number of line errors reported by the station.

- Out Line Errors (CLE Out)—Number of line errors reported in error reporting packets sent by the station's nearest active downstream neighbor.

- Internal Errors (CIE)—Number of adapter internal errors reported by the station.

- AC Errors (CACE)—Number of address copied (AC) errors reported in error reporting packets sent by the station's nearest active downstream neighbor.

- In Burst Errors (DBE In)—Number of burst errors reported by the station.

- Out Burst Errors (CBE Out)—Number of burst errors reported in error reporting packets sent by the station's nearest active downstream neighbor.

- Abort Errors (CABE)—Number of abort delimiters reported by the station.

- Lost Frame Errors (CLFE)—Number of lost frame errors reported by the station.

- Congestion Errors (CRCE)—Number of receive congestion errors reported by the station.

- Frame Copied Errors (CFCE)—Number of frame copied errors reported by the station.

- Frequency Errors (CFE)—Number of frequency errors reported by the station.

- Token Errors (CTE)—Number of token errors reported by this station.

| To	Select	Then
Issue a Remove Station MAC frame to remove a station from the ring...	**Remove_Station**	Specify the MAC address or ID of the station.
Display the detailed error counters for the station's NAUN…	**NAUN_Details**	
Refresh the statistics displayed on the panel...	**Refresh**	

⚠️ **Caution** Selecting **Remove_Station** and specifying the MAC address or ID of a station removes that station from the ring. Use this procedure with extreme caution.

Viewing ATM Port Statistics

To access statistics about the virtual ATM ports, select **Port Statistics** on the Statistics Menu panel and specify the port identifier of the ATM port. The Port *x* ATM Statistics panel (Figure 8-13) is displayed.

**Figure 8-13   Port x ATM Statistics Panel**
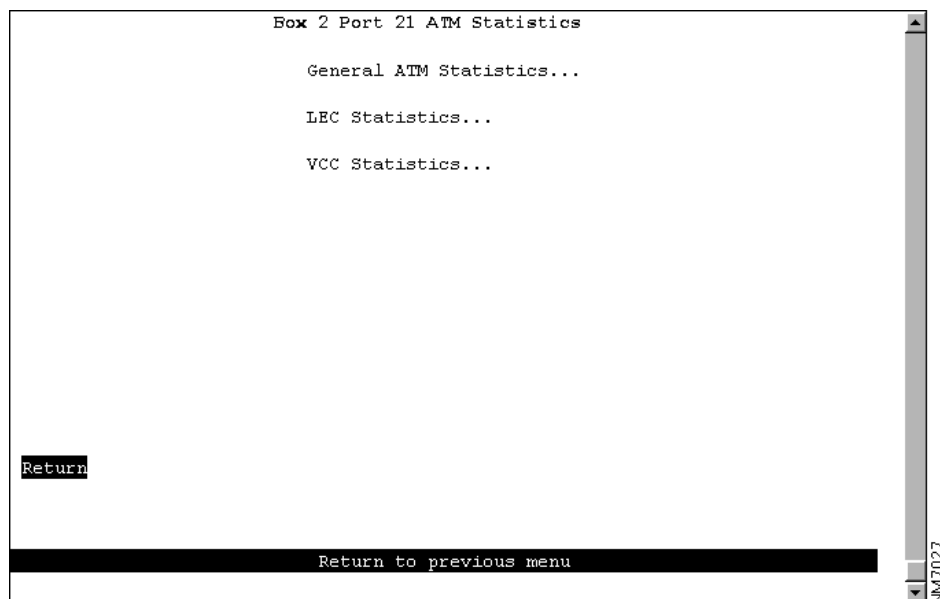
The following options are displayed on this panel:

- General ATM Statistics—Select this option to display statistical counters for the inbound and outbound traffic. Refer to the "Viewing General ATM Statistics" section on page 8-18 for more information.

- LEC Statistics—Select this option to access statistical information about an LEC. Refer to the "Viewing LEC Statistics" section on page 8-19 for more information.

- VCC Statistics—Select this option to display statistical counters for the VCC. Refer to the "Viewing VCC Statistics" section on page 8-27 for more information.

Viewing General ATM Statistics

To view general ATM statistical information, select **General ATM Statistics** on the Port *x* ATM Statistics panel. The Port x General ATM Statistics panel (Figure 8-14) is displayed.

Figure 8-14   Port x General ATM Statistics Panel
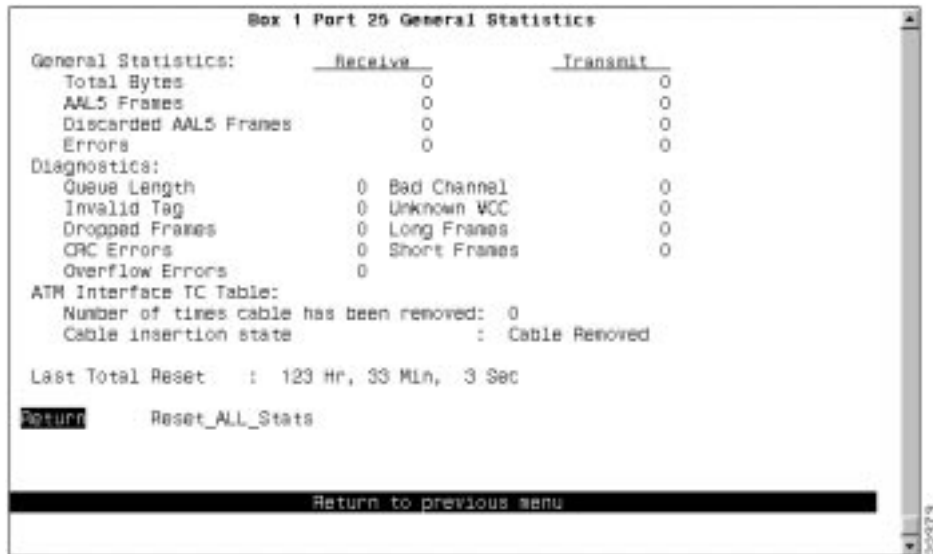
The following information is displayed on this panel:

- General Statistics

  — Total Bytes Receive—Number of bytes received.

  — Total Bytes Transmit—Number of bytes transmitted.

  — Unicast Frames Receive—Number of unicast frames received.

  — Unicast Frames Transmit—Number of unicast frames transmitted.

  — Discarded Frames Receive—Number of received frames that were subsequently discarded.

  — Discarded Frames Transmit—Number of frames discarded from the transmit queue.

  — Errors Receive—Number of frames received that contained errors.

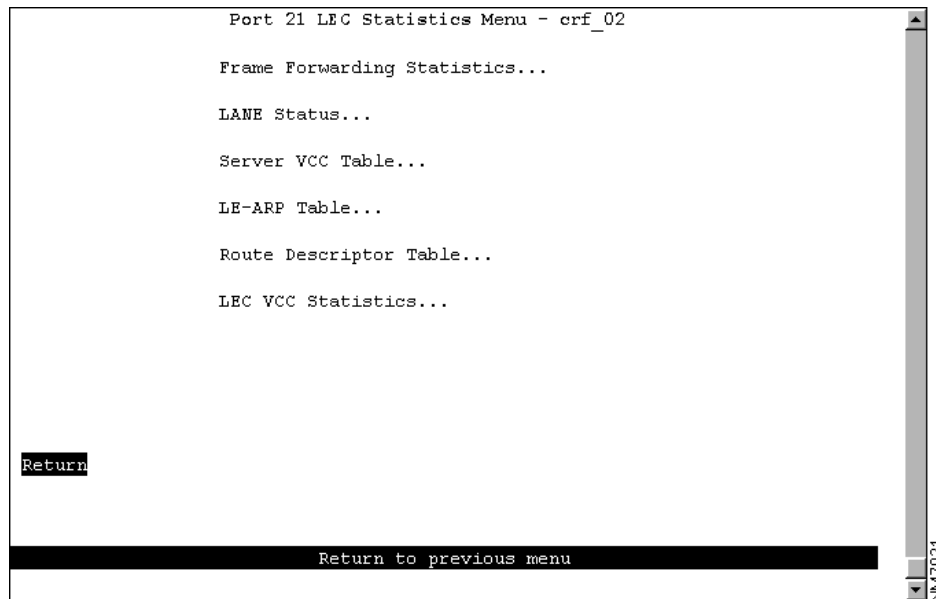 — Errors Transmit—Number of frames transmitted that contained errors.

- Diagnostics

  — Queue Length—Number of PDU's currently queued for transmission on ATM.

  — Bad Channel—Number of packets received on the switching bus with a channel number that is not currently associated with an open VCC.

  — Invalid Tag—Number of packets received on the switching bus with an invalid tag type.

  — Unknown VCC—Number of AAL-5 frames received from ATM on a VCC that is not currently open.

  — Dropped Frames—Number of frames dropped.

  — Long Frames—Number of frames received that were longer than the MTU.

  — CRC Errors—Number of frames received that contained a CRC error.

  — Short Frames—Number of frames received that were too short.

  — Overflow Errors—Number of buffer overflow errors.

- ATM Interface TC Table

  — Number of times cable has been removed—Number of times the cable has been removed since the statistics were last reset.

  — Cable insertion state—Indicates whether the cable is inserted or has been removed.

- Last Total Reset—Time (in hours, minutes, and seconds) since the ATM module statistics were last reset.

To	Select
Reset the ELAN statistics to 0...	**Reset ELAN Statistics**

Viewing LEC Statistics

To view statistical information about the LEC, select **LEC Statistics** on the Port *x* ATM Statistics panel. The Port *x* LEC Statistics Menu panel (Figure 8-15) is displayed.

Figure 8-15   Port x LEC Statistics Panel

```
                    Port 21 LEC Statistics Menu - crf_02

                    Frame Forwarding Statistics...

                    LANE Status...

                    Server VCC Table...

                    LE-ARP Table...

                    Route Descriptor Table...

                    LEC VCC Statistics...




Return


                         Return to previous menu
```

The following options are displayed on this panel:

- Frame Forwarding Statistics—Select this option to display forwarding statistics about received and transmitted frames. Refer to the "Viewing Frame Forwarding Statistics" section on page 8-20 for more information.

- LANE Status—Select this option to display the status of the elements of this ELAN. Refer to the "Viewing LANE Status" section on page 8-23 for more information.

- Server VCC Table—Select this option to display the server VCC table. Refer to the "Viewing the Server VCC Table" section on page 8-24 for more information.

- LE-ARP Table—Select this option to display the LE-ARP table. Refer to the "Viewing the LE-ARP Table" section on page 8-25 for more information.

- Route Descriptor Table—Select this option to display the LE-ARP route descriptor table. Refer to the "Viewing the LE-ARP Route Descriptor Table" section on page 8-25 for more information.

- LEC VCC Statistics—Select this option to display VCC statistics for this LEC. Refer to the "Viewing the LEC VCC Statistics" section on page 8-26 for more information.

Viewing Frame Forwarding Statistics

To view forwarding statistics about frames received and transmitted on this port, select **Frame Forwarding Statistics** on the Port *x* LEC Statistics Menu panel. The Frame Forwarding Statistics panel (Figure 8-16) is displayed.

Figure 8-16   Frame Forwarding Statistics Panel

The following information is displayed on this panel:

- Bytes Received—Total number of bytes received on this port.

- Bytes Transmitted—Total number of bytes transmitted on this port.

- Bytes Forwarded—Total number of bytes received on this port and forwarded by the Catalyst 3900 hardware or processor.

- ARP Requests Rx—Number of ARP requests received.

- ARP Requests Tx—Number of ARP requests sent.

- ARP Replies Rx—Number of ARP replies received.

- ARP Replies Tx—Number of ARP replies sent.

- Control Frames Rx—Number of control frames received.

- Control Frames Tx—Number of control frames sent.

- SVC Failures—Number of SVC failures detected.

- # Least Act VCC Disc—Number of times the VCC table has been full and the least active VCC has been disconnected.

- # Least Active VCC Found—Number of times the VCC table has been full and no least active VCC could be found.

- Long Frames—Number of frames received that exceed the specified maximum frame-length limit.

- Duplicate Ring Number—Number of frames received that contained a duplicate ring number.

- Ring Number Mismatch—Number of frames received that did not correctly include the port's ring number.

- Invalid RIF RC Field—Number of frames received that contained an illegal Routing Control field.

- RIF Length Exceeded—Number of frames received that contained a RIF that was too long.

- Explorer Overflow—Number of explorer frames dropped because the maximum explorer-forwarding rate was exceeded.

- Frames Filtered - Addr—Number of frames filtered by the MAC address filters.

- Frames Filtered - DSAP—Number of frames filtered by the protocol filters.

- TrCRF Filtered—Number of frames that were filtered at the TrCRF level.

- ELAN Down—Number of times frames could not be transmitted because the ELAN was down.

- Blocked—Number of times frames could not be transmitted because this port was blocked.

- Last Reset—Time (in hours, minutes, and seconds) since the ELAN statistics for this port were last reset.

- Rx Unicast

  — NSR Frames—Number of non-source-routed, unicast frames received on this port.

  — SR Frames—Number of source-routed, unicast frames received on this port.

  — STE Frames—Number of unicast spanning- tree explorer frames received on this port.

  — ARE Frames—Number of unicast all-routes explorer frames received on this port.

- Rx Broadcast

  — NSR Frames—Number of non-source-routed, broadcast frames received on this port.

  — SR Frames—Number of source-routed, broadcast frames received on this port.

  — STE Frames—Number of broadcast spanning-tree explorer frames received on this port.

  — ARE Frames—Number of broadcast all-routes explorer frames received on this port.

- Rx Multicast

  — NSR Frames—Number of non-source-routed, multicast frames received on this port.

  — SR Frames—Number of source-routed, multicast frames received on this port.

  — STE Frames—Number of multicast spanning-tree explorer frames received on this port.

  — ARE Frames—Number of multicast all-routes explorer frames received on this port.

- Rx Forwarded

  — NSR Frames—Number of non-source-routed frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

  — SR Frames—Number of source-routed frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

  — STE Frames—Number of spanning-tree explorer frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

  — ARE Frames—Number of all-routes explorer frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- Transmitted

  — NSR Frames—Number of non-source-routed frames transmitted by this port.

  — SR Frames—Number of source-routed frames transmitted by this port.

  — STE Frames—Number of spanning-tree explorer frames transmitted by this port.

  — ARE Frames—Number of all-routes explorer frames transmitted by this port.

To	Select
Reset the ELAN statistics for this port to 0...	**Reset_Stats**

Viewing LANE Status

To view the status of the elements of this LEC, select **LANE Status** on the Port *x* LEC Statistics Menu panel. The Port *x* LANE Status panel (Figure 8-17) is displayed.

Figure 8-17   Port x LANE Status Panel

```
                    Box 2 Port 21 LANE Status - john
   LEC State:    Forwarding
   ELAN Name :   john
   ELAN Type :   802.5

   Primary ATM Address: 47.00918100000000613E5D2601.00A0EE80EFA8.02
   LECS ATM Address   : 47.00918100000000613E5D2601.00603E0E0C43.00
   LES ATM Address    : 47.00918100000000613E5D2601.00603E0E0C41.01

   LEC Status:
      LEC ID:  2            Protocol:  1         Version: 1
      IF State            : Operational
      Topology Change     : FALSE
      Configuration Source  : Address via ILMI
      Actual Max frame Size : 4544

   Last Failure:
      Response Code       : None
      IF State            : Initial State
   Return

                       Return to previous menu
```

The following information is displayed on this panel:

- LEC State—Current state of the ELAN. Possible values are Disabled, Going Up, Up, Going Admin Down, Admin Down, Failing, Waiting for Module Up, and Forwarding.

- ELAN Name—Name of the ELAN that the LEC joins to provide connection to the ATM network. The name is automatically provided when the LEC connects with the ELAN.

- ELAN Type—Type of LAN to which the LEC belongs. Possible values are unspecified, .3 (for 802.3), and .5 (for 802.5).

- Primary ATM Address—Primary ATM address of the LEC.

- LECS ATM Address—ATM Address of the LECS that is assigned to the LEC.

- LES ATM Address—ATM address of the LES that is assigned to the LEC. This address is determined when the LEC starts.

- LEC Status

    — LEC ID—Virtual ATM Port LEC ID.

    — Protocol—LANE protocol.

    — Version—Version number of LANE protocol.

    — IF State—Status of the interface. Possible values are Initial State, LECS Connect, Configure, Join, Initial Registration, Bus Connect, Operational.

    — Topology Change—Indicates whether a topology change has occurred. Possible values are TRUE and FALSE.

    — Configuration Source—Source from which the LEC obtained its configuration. Possible values are Address via ILMI, Used Well Known Address, and Did Not use LECS.

    — Actual Max Frame Size—Actual maximum frame size used. The maximum frame size is the MTU plus the header. Possible values are 1516, 4544, 9234, and 18190.

- Last Failure

    — Response Code—Response code of the last failure. Possible values are None, Time-Out, Undefined error, Version Not Supported, Invalid Request Parameters, Duplicate LAN Destination, Duplicate ATM Address, Insufficient Resources, Access Denied, Invalid Requestor ID, Invalid LAN Destination, Invalid ATM Address, No Configuration, LE Configure Error, and Insufficient Information.

    — IF State—State of the interface at the last failure. Possible values are Initial State, LECS Connect, Configure, Join, Initial Registration, Bus Connect, and Operational.

Viewing the Server VCC Table

To view the server VCC table, select **Server VCC Table** on the Port *x* LEC Statistics Menu panel. The Port *x* Server VCC Table panel (Figure 8-18) is displayed.

Figure 8-18   Port x Server VCC Table Panel


```
                    Port 21 Server VCC Table - crf_02



            LEC Server              VPI/VCI
            Configure Direct        10/2817
            Control Direct          1/268
            Control Distribute      13/3585
            Multicast Send          1/0
            Multicast Forward       0/0












Return



                        Return to previous menu
```

The following information is displayed on this panel:

- Configure Direct—VPI/VCI of the configure direct server.

- Control Direct—VPI/VCI of the control direct server.

- Control Distribute—VPI/VCI of the control distribute server.

- Multicast Send—VPI/VCI of the multicast send server.

- Multicast Forward—VPI/VCI of the multicast forward server.

Viewing the LE-ARP Table

To view the LE-ARP table, select **LE-ARP Table** on the Port *x* LEC Statistics Menu panel. The Port *x* LE-ARP Table panel (Figure 8-19) is displayed.
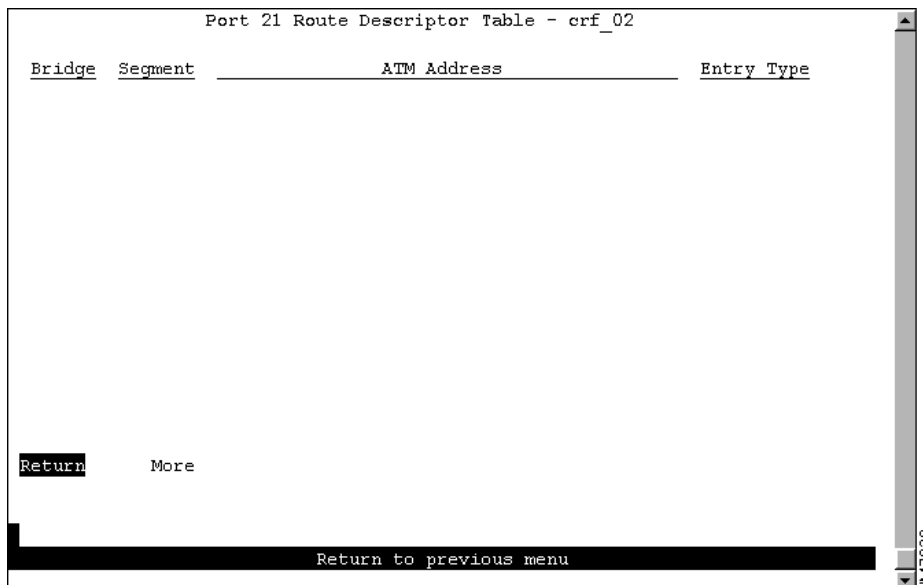
Figure 8-19   Port x LE-ARP Table Panel

The following information is displayed on this panel:

- MAC Address—MAC address.

- ATM Address—Corresponding ATM address.

- Rem—Indicates whether the address is remote. Possible values are Yes and No.

- Entry Type—How the entry was learned. Possible values are Learned Via Control, Learned Via Data, Static Volatile, Static Non-volatile, and Other.

Viewing the LE-ARP Route Descriptor Table

To view the LE-ARP route descriptor table, select **Route Descriptor Table** on the Port *x* LEC Statistics Menu panel. The Port *x* Route Descriptor Table panel (Figure 8-20) is displayed.

Figure 8-20   Port x Route Descriptor Table Panel

```
                    Port 21 Route Descriptor Table - crf_02

    Bridge   Segment                    ATM Address                    Entry Type






















    Return       More



                             Return to previous menu
```

The following information is displayed on this panel:

- Bridge—Number of the bridge through which the ATM address is accessed. Possible values are 1 through 15.

- Segment—Ring number of the segment through which the ATM address is accessed. Possible values are 0 through 4095.

- ATM Address—ATM address.

- Entry Type—Indicates how the entry was learned. Possible values are Learned Via Control, Learned Via Data, Static Volatile, Static Non-volatile, and Other.

Viewing the LEC VCC Statistics

To view VCC statistics for this LEC, select **LEC VCC Statistics** on the Port *x* LEC Statistics Menu panel. The Port *x* LEC VCC Statistics panel (Figure 8-21) is displayed.

Figure 8-21   Port x LEC VCC Statistics Panel


```
              Box 2 Port 21 LEC VCC Statistics - john

    VPI/VCI   Usage    Tx Frames    Tx Bytes    Rx Frames    Rx Bytes
    0/32      DDirec       10304      762496        10306      762564
    0/33      CDirec          17        1836            1         108
    0/34      CDist            0           0           20        2160
    0/35      M-Send      429114    23174156            0           0
    0/36      M-Forw           0           0       296569    16019618








Return        More



                     Return to previous menu
```

The following information is displayed on this panel:

- VPI/VCI—VPI and VCI that make up each VCC in this ELAN.

- Usage—Indicates how the VCC is used. Possible values are Config, CDirec, CDist, M-Send, M-Forward, and DD.

- Tx Frames—Number of frames transmitted through this VCC.

- Tx Bytes—Number of bytes transmitted through this VCC.

- Rx Frames—Number of frames received through this VCC.

- Rx Bytes—Number of frames transmitted through this VCC.

Viewing VCC Statistics

To view statistical information about the VCCs associated with this port, select **VCC Statistics** on the Port *x* ATM Statistics panel. The Port *x* ATM VCC Statistics panel (Figure 8-22) is displayed.

Figure 8-22   Port x ATM VCC Statistics Panel

```
                   Box 2 Port 21 ATM VCC Statistics

                         VPI:  0  VCI:  5
 Usage         :  SSCOP

 ATM Address   :  00.000000000000000000000000.000000000000.00
 Creation Method:  System
 Transmit Traffic Descriptor:
    Type : Best Effort
    Peak Rate: 353208
    QOS  : None          Frame Discard: No    Service Category:  UBR

 AAL5 Statistics:
    CRC Errors      :          0
    SAR Timeouts    :          0
    Oversized SDUs  :          0
    Frames Transmitted:      104    Bytes Transmitted:       1452
    Frames Received  :       107    Bytes Received   :       1556
        Last Total Reset:  0 Hr,  5 Min, 22 Sec
 Return     More



                         Return to previous menu
```

The following information is displayed on this panel:

- VPI—VPI associated with this VCC. Possible values are 0 through 3.

- VCI—VCI associated with this VCC. Possible values are 0 through 4095.

- Usage—Indicates how this VCC is used. Possible values are SSCOP, ILMI, OAM, LANE
  Config, LANE Control Direct, LANE Control Distribute, LANE Multicast Send, LANE
  Multicast Forward, and LANE Data Direct.

- Instance—Associated Virtual ATM Port number, which is also to TrCRF number.

- MAC Address—MAC address associated with this VCC.

- ATM Address—ATM address associated with this VCC.

- Creation Method—Indicates how the VCC was created. Possible values are System, PVC,
  Incoming Point-Point SVC, Outgoing Point-Point SVC, Incoming Point-Multipoint SVC,
  Outgoing Point-Multipoint SVC.

- Transmit Traffic Descriptor

  — Type—Traffic type. Possible values are atmfNoClpNoScr, atmfNoClpScr,
    atmfClpNo-TaggingScr, atmfClpTaggingScr, and BestEffort.

  — QOS—Quality of service. Possible values are Class 1, Class 2, Class 3, Class 4, and None.

  — Frame Discard—Whether to allow the switch to discard all complete AAL5 frames if any
    single cells are lost from an AAL5 frame. Possible values are Yes and No.

  — Service Category—Service category of the traffic. Possible values are other, cbr, rtVbr,
    nrtVbr, abr, and ubr.

- AAL5 Statistics

  — CRC Errors—Number of frames with CRC errors.

  — SAR Timeouts—Number of times the segment and reassembly unit timed out.

  — Oversized SDUs—Number of SSCOP SAAL service data units that exceeded the maximum specified size.

  — Frames Transmitted—Number of frames transmitted.

  — Bytes Transmitted—Number of bytes transmitted.

  — Frames Received—Number of frames received.

  — Bytes Received—Number of bytes received.

- Last Total Reset—Time (in hours, minutes, and seconds) since the port was last reset.

Viewing ISL Port Statistics

To access statistics about the ISL ports, select **Port Statistics** on the Statistics Menu panel and specify the port identifier of the ISL port. The Port *x* ISL Statistics panel (Figure 8-23) is displayed.

Figure 8-23   Port x ISL Statistics Panel
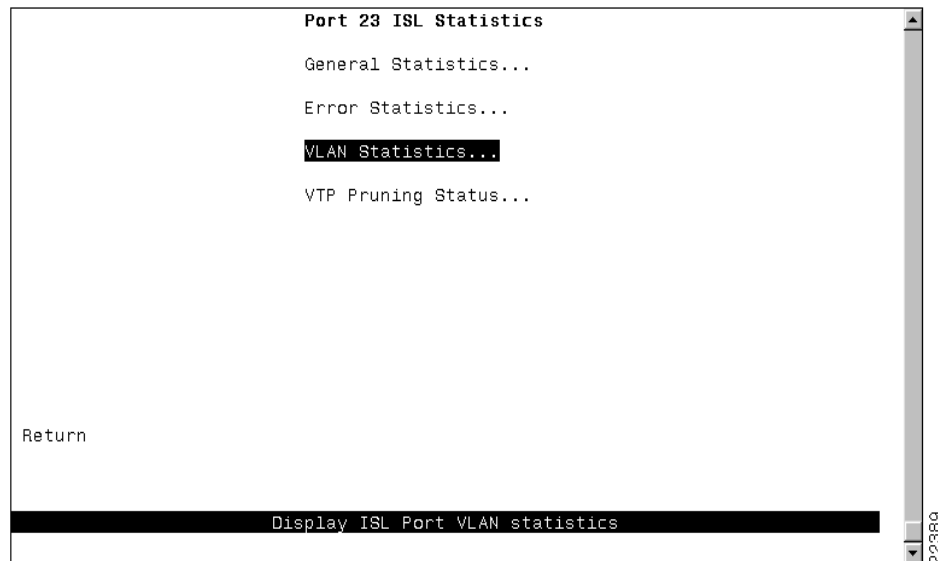
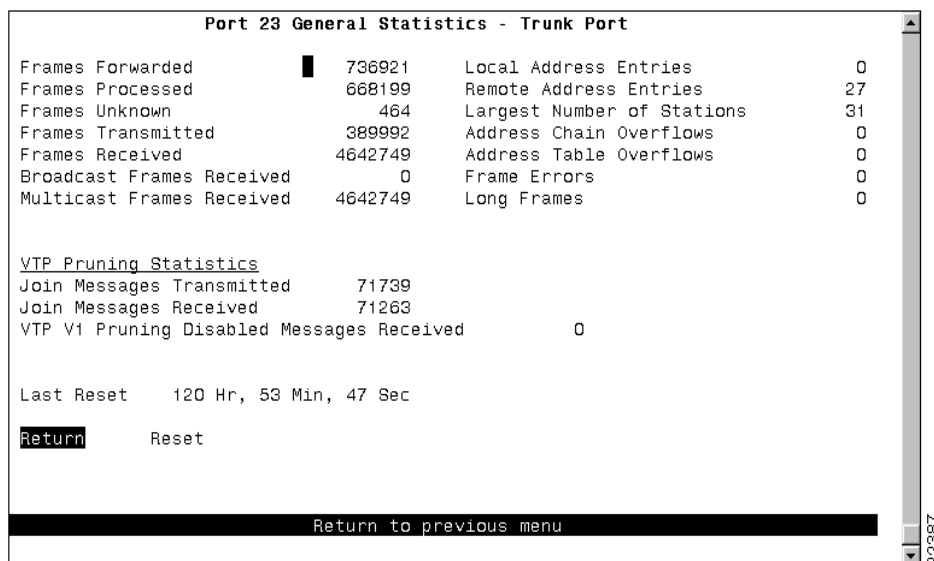
The following options are displayed on this panel:

- General Statistics—Select this option to display statistical counters pertaining to the traffic processed by the ISL port. Refer to the "Viewing General ATM Statistics" section on page 8-18 for more information.

- Error Statistics—Select this option to access statistical information about errors detected on the ISL port. Refer to the "Viewing LEC Statistics" section on page 8-19 for more information.

- VLAN Statistics—Select this option to display statistical counters pertaining to the traffic processed by the VLANs to which the ISL port belongs. Refer to the "Viewing VLAN Statistics" section on page 8-32 for more information.

- VTP Pruning Statistics—Select this option to access general VTP pruning statistical information such as the number VTP pruning Join messages received and transmitted by the port and the status of VLANs participating in VTP pruning. Refer to the "Viewing VTP VLAN Pruning Status" section on page 8-33 for more information.

Viewing General Statistics

To view general statistical information about the traffic on the ISL port, select **General Statistics** on the Port *x* ISL Statistics panel. The Port x General Statistics panel (Figure 8-24) is displayed. As the Token Ring ISL module encapsulates Token Ring frames in Ethernet frames, the frame counters on this panel pertain to the Ethernet frames transmitted and received by the ISL module. The information on the statistics panels is refreshed approximately every five seconds.

Figure 8-24   Port x General Statistics Panel

The following information is displayed on this panel:

- Frames Forwarded—Number of encapsulated Token Ring frames received on this port and forwarded by the Catalyst 3900 hardware or processor.

- Frames Processed—Number of encapsulated Token Ring frames received on this port and delivered to the Catalyst 3900 system software for processing.

- Frames Unknown—Number of encapsulated Token Ring frames processed by the Catalyst 3900 system software that contained either an unknown source address or unknown destination address.

- Frames Transmitted—Number of Ethernet frames transmitted by the ISL port.

- Frames Received—Number of Ethernet frames received by the ISL port.

- Broadcast Frames Received—Number of Ethernet broadcast frames received without errors.

- Multicast Frames Received—Number of Ethernet multicast frames received without errors.

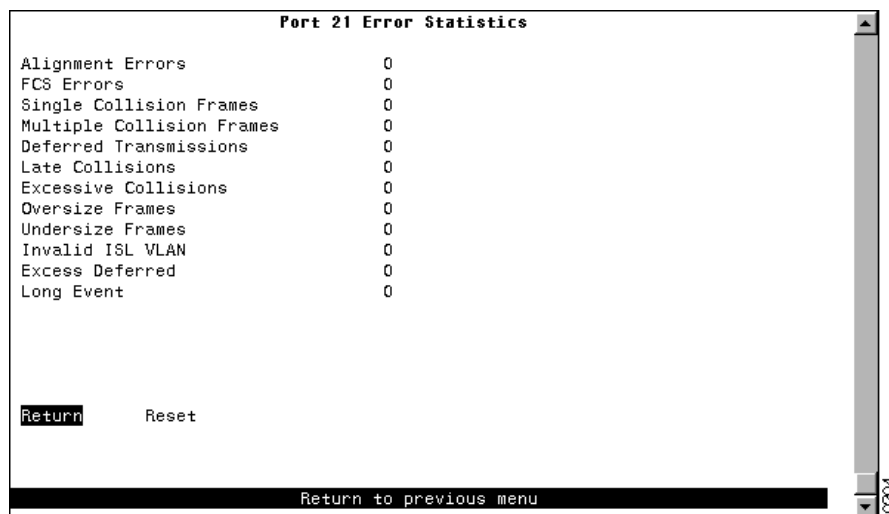- Local Address Entries—Number of addresses on this port that belong to the local segment.

- Remote Address Entries—Number of addresses on this port that belong to another segment.

- Largest Number of Stations—Largest number of addresses active since the last reset of the Catalyst 3900.

- Address Chain Overflows—Number of times an address hash bin has reached the maximum number of entries.

- Address Table Overflows—Number of times the address table has reached the maximum number of entries.

- Frame Errors—Total number of Ethernet frames received or transmitted by the ISL port that contained errors.

- Long Frames—Number of Ethernet frames received that exceed the maximum frame length limit of 24613 bytes.

- Last Reset—Time (in hours, minutes, and seconds) since the port statistics were last reset.

- Join Messages Transmitted—Number of VTP pruning Join messages transmitted by this port.

- Join Messages Received—Number of VTP pruning Join messages received on this port.

- VTP V1 Pruning Disabled Messages Received—Number of VTP V1 messages received on this port. These messages indicate that the neighboring trunk link does not support VTP pruning.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing Error Statistics

To view statistical information about errors detected on the ISL port, select **Error Statistics** on the Port *x* ISL Statistics panel. The Port *x* Error Statistics panel (Figure 8-25) is displayed. The information on the statistics panels is refreshed approximately every five seconds.

Figure 8-25   Port x Error Statistics Panel

```
                  Port 21 Error Statistics

Alignment Errors              0
FCS Errors                    0
Single Collision Frames       0
Multiple Collision Frames     0
Deferred Transmissions        0
Late Collisions               0
Excessive Collisions          0
Oversize Frames               0
Undersize Frames              0
Invalid ISL VLAN              0
Excess Deferred               0
Long Event                    0




Return      Reset



                Return to previous menu
```

The following information is displayed on this panel:

- Alignment Errors—Number of frames received that arrived with a non-integral number of octets and that failed the cyclic redundancy check (CRC).

- FCS Errors—Number of frames received with frame check sequence (FCS) errors.

- Single Collision Frames—Number of frames that were successfully transmitted after a single collision.

- Multiple Collision Frames—Number of frames that were successfully transmitted after more than one collision.

- Deferred Transmissions—Number of frames that were deferred during transmission due to other traffic on the segment. This number does not include frames that were deferred because of a collision.

- Late Collisions—Number of times a collision was detected after more than 512 bytes of the frame had been transmitted.

- Excessive Collisions—Number of times a transmission failed because the number of permitted collisions per transmission has been exceeded.

- Oversize Frames—Number of frames received that exceed the maximum frame length limit. Although ISL allows frames up to 24000 bytes, the Catalyst 3900 currently has a maximum frame length limit of 17800 bytes.

- Undersize Frames—Number of frames received that contained a valid FCS, but that were less than the minimum 64 bytes.

- Invalid ISL VLAN—Number of frames received that contained a source VLAN ID that was unknown (based on the current configuration of the switch).

- Excess Deferred—Number of times the ISL link was constantly busy for longer than 466944 bit times.

- Long Event—Number of times activity on the ISL receive channel exceeded 233472 bit times.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing VLAN Statistics

To view statistical information about traffic processed on each VLAN by the ISL port, select **VLAN Statistics** on the Port *x* ISL Statistics panel. The Port *x* VLAN Statistics panel (Figure 8-26) is displayed.

Figure 8-26   Port x VLAN Statistics Panel

```
                        Port 21 VLAN Statistics
        VLAN ID    Ring#        Forwarding    Unknown       ARE     STE
                   Mismatch     Frames        Addresses     Count   Count
        100        0            0             0             0       0
        101        0            0             0             0       0
        102        0            0             0             0       0
        103        0            0             0             0       0
        104        0            0             0             0       0
        1003       0            0             0             0       0
        1005       0            0             0             0       0




Return      More


                        Return to previous menu
```

The following options are displayed on this panel:

- VLAN ID—Numeric identifier of the VLAN.

- Ring # Mismatch—Number of frames received by the ISL module from the switching bus in which the expected ring number was not found in the routing information field (RIF).

- Frames Forwarded—Number of frames on this VLAN that were forwarded from the ISL port to the switching bus.

- Unknown Address—Number of frames received that contained a destination address that was unknown to the switch.

- ARE Count—Number of ARE frame processed by the port on this VLAN.

- STE Count—Number of STE frames processed by the port on this VLAN.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing VTP VLAN Pruning Status

To view the VTP pruning status for the VLANs on the ISL port, select **VTP Pruning VLAN Status** on the Port *x* ISL Statistics panel. The Port *x* VTP Pruning Status panel (Figure 8-27) is displayed.

Figure 8-27   **Port x VTP Pruning Status Panel**

```
                 Port 23 VTP Pruning Status - Trunk Port

         VLAN Name                              ID    Eligible    Pruned
         BRF_100                               100     yes         no
              CRF_101                          101     no          no
              CRF_102                          102     no          no
              CRF_103                          103     no          no
              CRF_104                          104     no          no
              CRF_105                          105     no          no
              crf106                           106     no          no
              CRF_107                          107     no          no
              CRF_108                          108     no          no
         BRF_200                               200     yes         no
              CRF_201                          201     no          no
              CRF_202                          202     no          no
              CRF_203                          203     no          no
              CRF_204                          204     no          no
         trbrf-default                        1005     no          no
              trcrf-default                   1003     no          no


Return    More

                      Return to previous menu
```

The following information is displayed on this panel:

- VLAN—Name of the TrBRF. A list of TrCRFs assigned to the TrBRF is displayed beneath the TrBRF.

- ID—VLAN ID.

- Eligible—Indicates whether the TrBRF (and subsequently the TrCRFs assigned to the TrBRF) are eligible for VTP pruning. Possible values are Yes and No.

- Pruned—Indicates whether the VLAN is currently pruned on this port. Possible values are Yes and No.

Viewing Address Tables

You can view the address and route descriptor tables, which are used in forwarding frames, for the following:

- Catalyst 3900

- Individual VLANS

To view address and route descriptor tables, select **Address Tables** on the Statistics Menu. The Address Tables panel (Figure 8-28) is displayed.

Figure 8-28   Address Tables Panel

The following options are displayed on this panel:

- Master Address Table—Select this option to view the contents of the master address table. For more information, refer to the "Viewing the Master Address Table" section on page 8-35.

- Master Route Descriptor Table—Select this option to view the contents of the master route descriptor table. For more information, refer to the "Viewing the Master Route Descriptor Table" section on page 8-37.

- VLAN Address Table—Select this option to view the address tables for each VLAN. For more information, refer to the "Viewing the Address Table for Each VLAN" section on page 8-38.

- VLAN Route Descriptor Table—Select this option to view the route descriptor tables for each VLAN. For more information, refer to the "Viewing Route Descriptor Table for Each VLAN" section on page 8-39.

Viewing the Master Address Table

To view all entries in the master address table, select **Master Address Table** on the Address Table panel. The Master Address Table panel (Figure 8-29) is displayed. The master address table can contain up to 10,000 entries.

Figure 8-29   Master Address Table Panel


```
                      Box 1 Master Address Table                      ▲

Address        Type                     Ports (Filtered:high-lighted, Trunks:Bold)
000030:2CEE59 Known-TR Port 16          16
000030:98DF71 Known-TR Port 16          16
000030:E26144 Known-TR Port 16          16
000083:2C7F0F Known-TR Port 16          16
000577:004F90 Known-TR Port 16          16
000577:005210 Known-TR Port 16          16
000577:005220 Known-TR Port 16          16
000577:005391 Known-TR Port 11          11
000577:01C893 Known-TR Port 16          16
000577:01CA80 Switch Base Address       11 12 13 14 15 16 17 18 19 20
000577:01CA80 Switch Base Address       1 2 3 4 5
000577:01CA80 Switch Base Address       6 7 8 9 10
000577:01CAA0 trbrf-default             11 12 13 14 15 16 17 18 19 20
000577:01CAA1 BRF0                       1 2 3 4 5
000577:01CAA2 BRF1                       6 7 8 9 10

Return    More    Search



                      Return to previous menu
```

The following information is displayed on this panel:

- Address—MAC address.

- Type—Type of address. Possible values are:

  — Switch Base Address for the address assigned to the Catalyst 3900.

  — VLAN Name for an address assigned to a VLAN domain. Only the first 16 characters of the name are displayed.

  — STP Port x for the switch port's MAC address that is used by the STP.

  — Known-*port_type* Port x for a known address. Possible values of *port_type* are TR (Token Ring port) and STK (stack port).

  — Unknown for a MAC address with an unknown location.

  — STP Multicast for a BPDU multicast address reserved for the port (hello packet).

  — Multicast for a multicast address.

  — Multicast-Cisco for a Cisco multicast address.

  — STP Multicast-IBM for the IBM bridge functional address.

  — STP Multicast-Cisco for the Cisco spanning-tree address.

  — Broadcast for a broadcast address.

- Ports—Ports of the switch or a feature card whose address tables include this MAC address.

Note   Filtered ports are displayed as highlighted entries. Trunk ports are displayed as bold entries.

To	Select	Then
Search for a specific MAC address…	**Search**	Specify the address.

Viewing the Master Route Descriptor Table

To view all the route descriptors (and their associated ports) that have been learned by the Catalyst 3900, select **Master Route Descriptor Table** on the Address Tables panel. The Master Route Descriptor Table panel (Figure 8-30) is displayed. These descriptors are contained within the 10,000 entries allowed for the master address table.

Figure 8-30   Master Route Descriptor Table Panel

The following information is displayed on this panel:

- Route—Route descriptor associated with a port in the format:

  `local_segment_number.bridge_number.remote_segment_number`

  The local segment number is displayed in hexadecimal and is the same for all ports within a single domain. Possible ring numbers are 01 through FFF. Possible bridge numbers are 00 through 0F.

- Type—Type of route descriptor. Possible values are:

  — Known-*port_type* Port *x* for a known source-route descriptor. Possible values of *port_type* are TR and STK.

  — Unknown if the source route location is unknown.

- Ports—Ports of the switch or a feature card whose address tables include this route descriptor.

To	Select	Then
Search for a specific route descriptor…	**Search**	Specify the route descriptor.

Viewing the Address Table for Each VLAN

To view the entries in the address table for each VLAN, select **VLAN Address Table** on the Address Tables panel and select the desired TrCRF. The VLAN Address Table panel (Figure 8-31) is displayed. The entries are listed in the order in which they were learned.

Figure 8-31   VLAN Address Table Panel

The following information is displayed on this panel:

- Address—MAC address.

- Type—Type of address. Highlighted entries indicate filtered ports. Possible values are:

  — Switch Base Address—Address assigned to the Catalyst 3900.

  — VLAN Name—Address assigned to a VLAN domain. Only the first 16 characters of the name are displayed.

  — STP Port *x*—Address reserved for an STP port.

  — Known-*port_type* Port *x*—Known address. Possible values of *port_type* are TR and STK.

  — Unknown—MAC address with an unknown location.

  — STP Multicast—BPDU multicast address reserved for the port (hello packet).

  — Multicast—Multicast address.

  — STP Multicast-Cisco—Cisco spanning-tree address.

  — STP Multicast-IBM—IBM bridge functional address.

  — Broadcast—Broadcast address.

- Ports—Ports of the switch or a feature card whose address tables include this MAC address.

Note Highlighted entries indicate filtered ports. Bold entries indicate trunk ports.

To	Select	Then
Search for a specific MAC address…	**Search**	Specify the address.

Viewing Route Descriptor Table for Each VLAN

To view the entries in the route descriptor table for each VLAN, select **VLAN Route Descriptor Table** on the Address Table panel and specify the desired TrCRF. The VLAN Route Descriptor Table panel (Figure 8-32) is displayed.

Figure 8-32   VLAN Route Descriptor Table Panel

The following information is displayed on this panel:

- Route—Route descriptor associated with a port in the format:

  `local_segment_number.bridge_number.remote_segment_number`

  The local segment number displays in hexadecimal and is the same for all ports within a single domain. Possible ring numbers are 01 through FFF. Possible bridge numbers are 00 through 0F.

- Type—Type of route descriptor. Possible values are:

  — Known-*port_type* Port *x*—Known source-route descriptor. Possible values of *port_type* are TR and STK.

  — Unknown—Source route location is unknown.

- Ports—Ports of the switch or a feature card whose address tables include this route descriptor.

To	Select	Then
Search for a specific route descriptor…	**Search**	Specify the route descriptor.

Viewing Spanning-Tree Information for a VLAN

To display the spanning-tree parameters for a TrBRF, select **Current Spanning Tree Information** on the Statistics Menu and specify the desired TrBRF. The Current Spanning Tree Information panel (Figure 8-33) is displayed.

Figure 8-33   Current Spanning Tree Information Panel

The following information is displayed on this panel:

- Bridge ID—Priority and MAC address of this bridge.

- Root ID—Priority and MAC address of the root bridge.

- Root CRF—Number of the VLAN ID of the TrCRF that is closest to the root. This Catalyst 3900 communicates with the root through this TrCRF.

- Hello Time—Time (in seconds) that the root waits between sending configuration messages. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.

- Max Message Age—Time at which the configuration message used by the spanning-tree algorithm should be discarded. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.

- Forward Delay—Time the root waits between transitions from listening to learning and from learning to forwarding. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.

- CRF—VLAN ID of a TrCRF belonging to this TrBRF.

- Ptcl—STP running on each TrCRF. Possible values are IBM, IEEE, or no value.

- PId—Port ID that is used to determine the role of the logical port in the spanning tree. The port ID is expressed in the form *port priority.port number.*

- PCst—Cost associated with each logical port. Lower numbers are generally assigned to ports attached to faster media (such as FDX or TokenChannel), and higher numbers are generally assigned to ports attached to slower media (such as 2400-baud modem links).

- PSts—Current status of this logical port within the spanning tree. Possible values are:

  — DSB (disabled)

  — BLK (blocked)

  — LSN (listening)

  — LRN (learning)

  — FWD (forwarding)

  The rules that define the state of the logical port are as follows:

  — A port on a network segment that contains no other switch or bridge is always forwarding.

  — If two ports of the Catalyst 3900 are connected to the same network segment and there is no other bridge or switch, the port with the lower ID is forwarding and the other is blocked.

  — When the switch is booted, all ports are blocked initially, and then some of them change to a different state: listening, learning, and forwarding, in that order. To see the change in states you must repeatedly exit from this menu, and then select it again. All ports that are going to change states from blocking to forwarding will have done so after two to three times the value of:

  Switch Maximum Message Age + (2 x Switch Forward Delay)

- DCst—Cost for a packet to travel from this port to the root in the current spanning-tree configuration. The slower the media, the higher the cost.

- Dsg SwId/BrId—Priority and MAC address of the device through which this port has determined it must communicate with the root of the spanning tree.

- DsgPId—Port on the designated bridge through which this Catalyst 3900 will communicate with the root of the spanning tree. This information is useful if the Catalyst 3900 is the designated bridge on one or more network segments.

- #Chgs—Number of topology changes, that is, the number of times the port has entered the forwarding state plus the number of times the port has made the transition from forwarding to blocking. The counter is reset when the switch is reset or the spanning tree is turned on.

- Last Chg—Time since the port last entered the forwarding state or made the transition from forwarding to blocking.

You cannot change any information on this panel. To change the spanning-tree parameters, refer to the "Configuring Spanning-Tree Parameters" section on page 6-27 of the "Configuring the Catalyst 3900" chapter.

Viewing Spanning-Tree Information for a TrCRF

To display the spanning-tree parameters for a TrCRF that belongs to the currently displayed TrBRF, select **CRF-Spanning-Tree** on the Current Spanning Tree Information panel for a TrBRF and specify the desired TrCRF. The Current Spanning Tree Information panel (Figure 8-34) is displayed.

Figure 8-34   Current Spanning Tree Information for a TrCRF Panel

The following information is displayed on this panel:

- Bridge ID—Priority and MAC address of this bridge.

- Root ID—Priority and MAC address of the root bridge.

- Root Port—Number of the port on this Catalyst 3900 that is closest to the root. This Catalyst 3900 communicates with the root through this port. If this Catalyst 3900 has been accepted as the root of the spanning-tree network, this field displays "This Bridge".

- Protocol—STP running on the TrCRF. Possible values are Cisco and IEEE.

- Hello Time—Time (in seconds) that the root waits between sending configuration messages. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.

- Max Message Age—Time at which the configuration message used by the spanning-tree algorithm should be discarded. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.

- Forward Delay—Time the root waits between transitions from listening to learning and from learning to forwarding. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.

- Port—Port number.

- PId—Port ID that is used to determine the role of the port in the spanning tree. The port ID is expressed in the form *port priority.port number.*

- PCst—Cost associated with each port. Lower numbers are generally assigned to ports attached to faster media (such as FDX or TokenChannel), and higher numbers are generally assigned to ports attached to slower media (such as 2400-baud modem links).

- PSts—Current status of this port within the spanning tree. Possible values are:
  - — DSB (disabled)
  - — BLK (blocked)
  - — LSN (listening)
  - — LRN (learning)
  - — FWD (forwarding)

  The rules that define the state of the port are as follows:

  - — A port on a network segment that contains no other switch or bridge is always forwarding.
  - — If two ports of the Catalyst 3900 are connected to the same network segment and there is no other bridge or switch, the port with the lower ID is forwarding and the other is blocked.
  - — When the switch is booted, all ports are blocked initially, and then some of them change to a different state: listening, learning, and forwarding, in that order. To see the change in states you must repeatedly exit from this menu, and then select it again. All ports that are going to change states from blocking to forwarding will have done so after two to three times the value of:

    Switch Maximum Message Age + (2 x Switch Forward Delay)

- DCst—Cost for a packet to travel from this port to the root in the current spanning-tree configuration. The slower the media, the higher the cost.

- Dsg SwId/BrId—Priority and MAC address of the device through which this port has determined it must communicate with the root of the spanning tree.

- DsgPId—Port on the designated bridge through which this Catalyst 3900 will communicate with the root of the spanning tree. This information is useful if the Catalyst 3900 is the designated bridge on one or more network segments.

- #Chgs—Number of topology changes, that is, the number of times the port has entered the forwarding state plus the number of times the port has made the transition from forwarding to blocking. The counter is reset when the switch is reset or the spanning tree is turned on.

- Last Chg—Time since the port last entered the forwarding state or made the transition from forwarding to blocking.

You cannot change any information on this panel. To change the spanning-tree parameters, refer to the "Configuring Spanning-Tree Parameters" section on page 6-27 of the "Configuring the Catalyst 3900" chapter.

Viewing Statistics for Each VLAN

The Catalyst 3900 provides statistical information for both TrCRFs and TrBRFs. To access statistics for VLANs, select **VLAN Statistics** on the Statistics Menu.

Viewing Statistics for a TrCRF

To view statistics for a TrCRF, select **VLAN Statistics** on the Statistics Menu, select TrCRF, and then select the desired TrCRF. The VLAN Statistics panel (Figure 8-35) is displayed.

Figure 8-35   VLAN Statistics Panel for a TrCRF
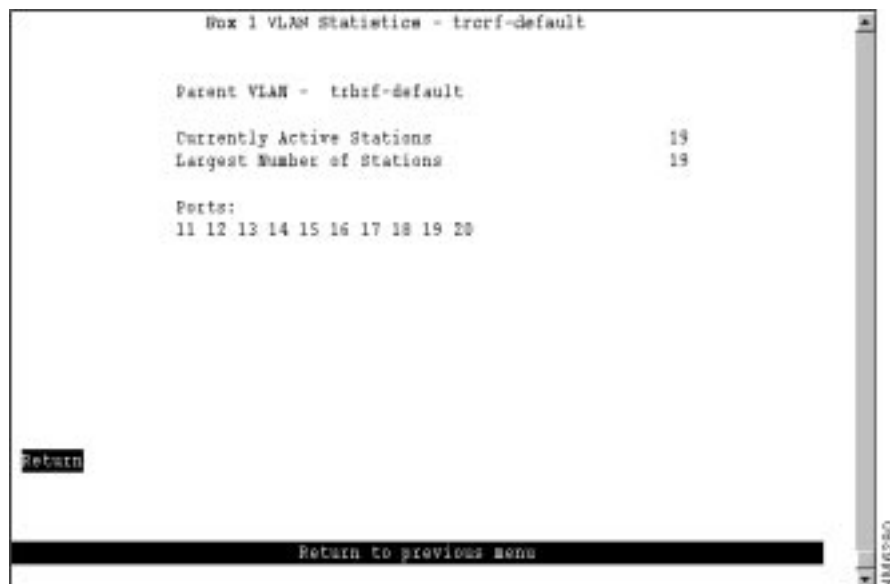
The following information is displayed on this panel:

- Parent VLAN—Name of the parent TrBRF.

- Currently Active Stations—Number of addresses currently in the master address table that are recognized by ports belonging to this domain.

- Largest Number of Stations—Largest number of addresses in the master address table since the last reset or power cycle that are recognized by ports belonging to this domain.

- Ports—List of ports that belong to this TrCRF.

Viewing Statistics for a TrBRF

To view statistics for a TrBRF, select **VLAN Statistics** on the Statistics Menu, select TrBRF, and then select the desired TrBRF. The VLAN Statistics panel (Figure 8-36) is displayed.

Figure 8-36   **VLAN Statistics Panel for a TrBRF**

The following information is displayed on this panel:

- Currently Active Stations—Number of addresses currently in the master address table that are recognized by ports belonging to this domain.

- Largest Number of Stations—Largest number of addresses in the master address table since the last reset or power cycle that are recognized by ports belonging to this domain.

To	Select	Then
Display a list of the TrCRFs associated with this TrBRF…	**Display Members**	Refer to the "Displaying the TrCRFs of a TrBRF" section on page 8-45.

Displaying the TrCRFs of a TrBRF

To display the TrCRFs associated with a TrBRF, select **Display Members** on the VLAN Statistics panel. The VLAN Statistics panel (Figure 8-37) is displayed.

Figure 8-37   Display Members VLAN Statistics Panel for a TrBRF

```
                    Box 1 VLAN Statistics - trbrf-default

Members:
                 trcrf-default






















Return      More




                          Return to previous menu
```
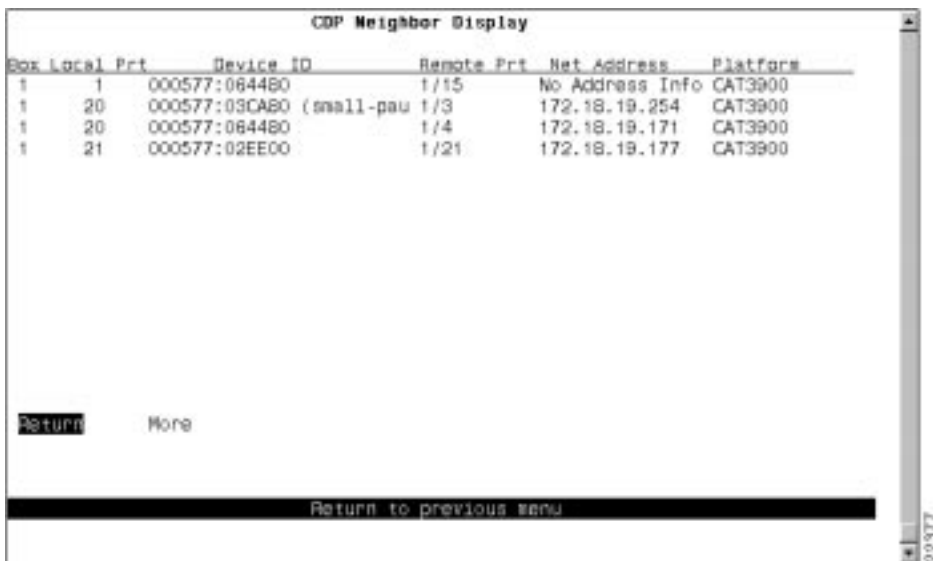
This panel lists VLAN names of all the TrCRFs associated with the parent TrBRF.

Viewing CDP Neighbor Information

To view information about other Cisco devices with which the Catalyst 3900 is communicating via CDP, select **CDP Neighbor Display** on the Statistics Menu. The CDP Neighbor Display panel (Figure 8-38) is displayed.

Figure 8-38   CDP Neighbor Display Panel

```
                         CDP Neighbor Display

Box Local Prt       Device ID           Remote Prt   Net Address       Platform
 1      1     000577:0644B0              1/15     No Address Info  CAT3900
 1     20     000577:03CAB0 (small-pau 1/3        172.18.19.254    CAT3900
 1     20     000577:0644B0             1/4        172.18.19.171    CAT3900
 1     21     000577:02EE00             1/21       172.18.19.177    CAT3900












Return      More




                          Return to previous menu
```

The following information is displayed on this panel:

- Box Local Prt—Port on the Catalyst 3900 that is enabled for CDP.

- Device ID—Host name or hardware serial number (in ASCII) of the remote device.

- Remote Prt—Port on the remote device that is enabled for CDP.

- Net Address—IP address of the remote device.

- Platform—Type of device (often indicated by the device name or part number).

Viewing VTP Statistics

You can view statistics about the VTP, including message counters. There are three types of VTP messages for which counters are maintained:

- Summary Advertisements—Contains the management domain name, the configuration revision number, the update timestamp and identity, the authentication checksum, and the number of Subset Advertisement messages which follow it.

- Subset Advertisements—Contains all information for one or more (but always an integral number of) VLANs, and indicates its own sequence number within those which follow the Summary Advertisement.

- Advertisement Requests—Requests information about VLANs.

If the switch is operating in Server mode, an advertisement is sent across the trunk port when the following events occur:

- Immediately upon a change in the configuration of VLAN information.

- When no other Summary Advertisement with the current configuration revision number has been received within the timeout period.

Each advertisement consists of one Summary Advertisement immediately followed by zero or more Subset Advertisements. The number of Subset Advertisement messages that follow a Summary Advertisement depends on the reason for sending the advertisement.

- If the advertisement is sent because neither this device nor any other device has recently sent an advertisement, then the Summary Advertisement is followed by zero Subset Advertisement messages.

- If the advertisement is sent because a configuration change has been made, then the Summary Advertisement is followed by the minimum number of Subset Advertisement messages required to contain all information on all VLANs and ordered in ascending order of ISL VLAN ID.

- If the advertisement is sent because an Advertisement Request for information on all VLANs was received, then the Summary Advertisement is followed by the minimum number of Subset Advertisement messages required to contain all information on all VLANs. The messages are sent in ascending order of ISL VLAN ID.

- If the advertisement is sent because an Advertisement Request for information on a subset of VLANs was received, the Summary Advertisement is followed by the minimum number of Subset Advertisement messages required to contain all information on all VLANs. The messages are sent in ascending order of ISL VLAN ID, however, the transmission of Subset Advertisements that only contain information on unrequested VLANs is suppressed.

An Advertisement Request is sent after a reboot. Also, if any of the following actions occur then a timer is started:
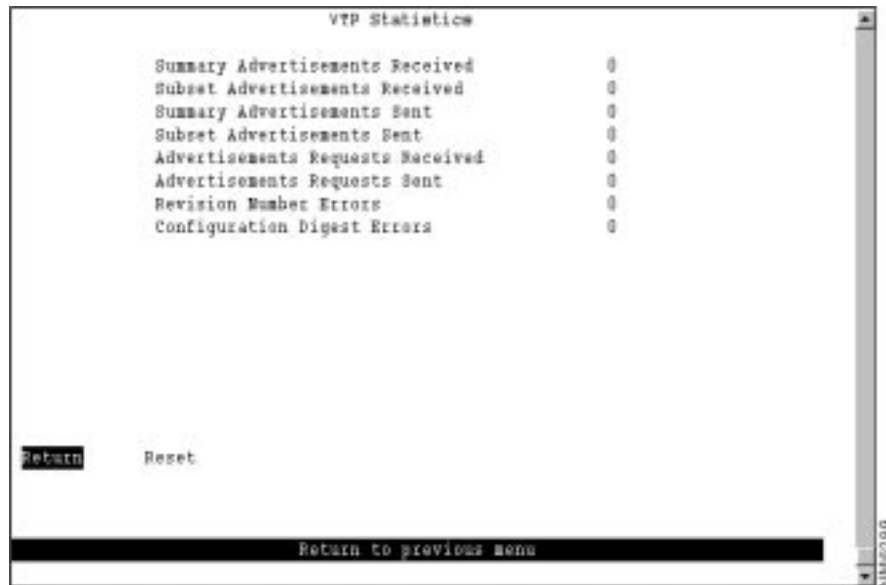
- A Subset Advertisement message is received that contains a configuration revision number that is higher than the device's currently known value.

- A Summary Advertisement is received that contains a configuration revision number that is greater than the device's currently known value and that is not followed by any Subset Advertisements.

- The expected number of Subset Advertisement messages is not received within a short period after receiving a Summary Advertisement message having a configuration revision number that is greater than the device's currently known value.

- A Summary Advertisement is received that contains a configuration revision number that is more than one greater than the device's currently known value.

If the timer expires before either an Advertisement Request or Summary Request is received, then an Advertisement Request is sent.

When an Advertisement Request is sent because some Subset Advertisement messages were missed, the Advertisement Request is set to request only those VLANs that were missed.

To view VTP message counters, select **VTP Statistics** on the Statistics Menu. The VTP Statistics panel (Figure 8-39) is displayed.

Figure 8-39   VTP Statistics Panel

The following information is displayed on this panel:

- Summary Advertisements Received—Total number of VTP Summary Advertisements received for this management domain.

- Subset Advertisements Received—Total number of VTP Subset Advertisements received for this management domain.

- Summary Advertisements Sent—Total number of VTP Summary Advertisements sent for this management domain.

- Subset Advertisements Sent—Total number of VTP Subset Advertisements sent for this management domain.

- Advertisements Requests Received—Total number of VTP Advertisement Requests received for this management domain.

- Advertisements Requests Sent—Total number of VTP Advertisement Requests sent for this management domain.

- Revision Number Errors—Number of occurrences of configuration revision number errors for this management domain. A configuration revision number error occurs when a device receives a VTP advertisement for which:

  — The advertisement's Configuration Revision Number is the same as the current locally held value.

  — The advertisement's digest value is different from the current locally held value.

- Configuration Digest Errors—Number of occurrences of configuration digest errors for this management domain. A configuration digest error occurs when a device receives a VTP advertisement for which:

  — The advertisement's Configuration Revision Number is greater than the current locally held value.

  — The advertisement's digest value does not match the VLAN information assumed by the receiver of the advertisement, where the information assumed is the combination of the information explicitly contained in the advertisement plus any omitted information as currently known by the receiving device.

To	Select
Reset the statistics displayed on the panel…	**Reset**

Viewing Diagnostic Test Results

To view the results of the most recent power-on diagnostics, select **Diagnostic Test Results** on the Statistics Menu. The Diagnostic Test Results panel (Figure 8-40) is displayed.

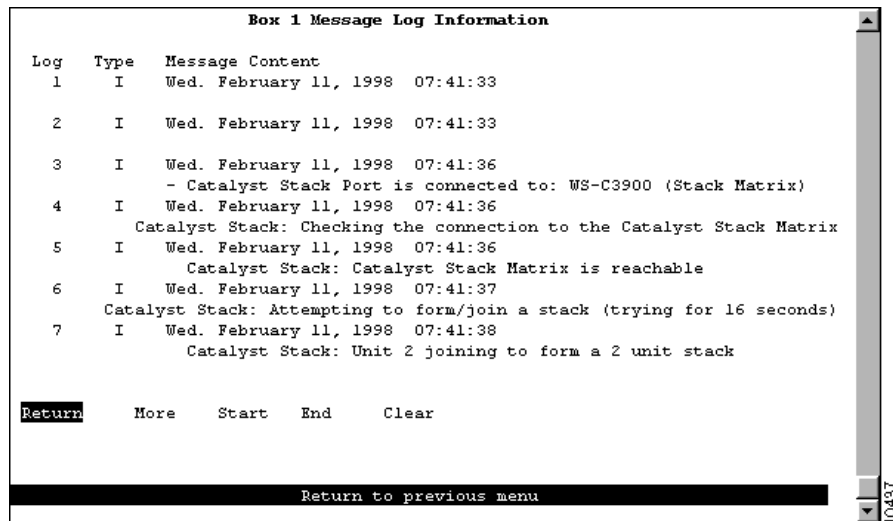**Figure 8-40   Diagnostic Test Results Panel**

This panel displays a list of the self-diagnostic tests that the Catalyst 3900 performs and the result of each. For information about running the diagnostic tests, refer to the "Resetting the Catalyst 3900" chapter.

Viewing the Message Log

To view the message log, select **Message Log** on the Statistics Menu. The Message Log Information panel (Figure 8-41) is displayed. The data on this panel is useful to technical experts when they are solving complex problems.

The log can maintain a list of up to 200 messages. Once 200 messages have been logged, new messages received will be added to the end of the log and the oldest message will be deleted from the panel. The log entry numbers continue to increment, indicating the total number of messages received. The first (oldest) seven messages are displayed. You can use the options at the bottom of the panel to move through the message log.

Figure 8-41   Message Log Panel

```
                    Box 1 Message Log Information

  Log    Type    Message Content
   1      I      Wed. February 11, 1998  07:41:33

   2      I      Wed. February 11, 1998  07:41:33

   3      I      Wed. February 11, 1998  07:41:36
                 - Catalyst Stack Port is connected to: WS-C3900 (Stack Matrix)
   4      I      Wed. February 11, 1998  07:41:36
              Catalyst Stack: Checking the connection to the Catalyst Stack Matrix
   5      I      Wed. February 11, 1998  07:41:36
                   Catalyst Stack: Catalyst Stack Matrix is reachable
   6      I      Wed. February 11, 1998  07:41:37
           Catalyst Stack: Attempting to form/join a stack (trying for 16 seconds)
   7      I      Wed. February 11, 1998  07:41:38
                   Catalyst Stack: Unit 2 joining to form a 2 unit stack


 Return     More     Start     End      Clear



                       Return to previous menu
```

The following information is displayed on this panel:

- Log—Index number identifying the log file.

- Type—Message type. Possible values are:

  — W—Warning

  — I—Informational

- Message Content—Full text of the message.

To	Select
Page forward in the message log...	**More**
Move to the end of the message log...	**End**
Return to the beginning of the message log...	**Start**
Delete the contents of the message log…	**Clear**

Displaying a Summary of Your Configuration

To display a summary of the configuration of your Catalyst 3900, select **Display Summary** on the Statistics Menu. The summary information is displayed on the console panel (Figure 8-42).

Figure 8-42   Configuration Summary
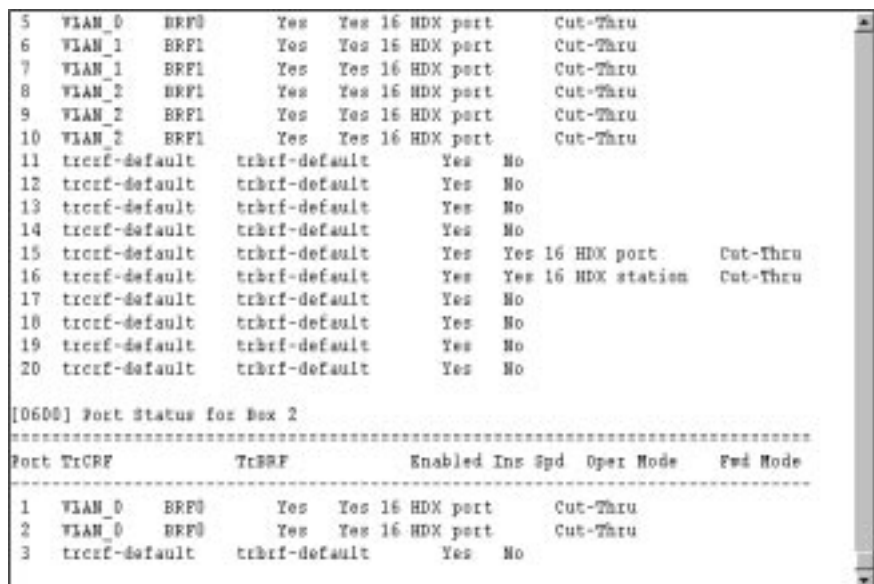
You can scroll through the information to view your current configuration parameter settings. The summary includes:

- Switch and stack information
- VLAN configuration information
- IP configuration information
- SNMP configuration information
- Spanning tree configuration information
- Port status
- CDP configuration information
- Module configuration information
- Message log
- Diagnostic test results

To exit from the configuration summary and return to the Statistics menu, wait until the configuration summary dump is complete and then press any key.